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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/295,323	04/20/1999	YOSHIHIRO HONMA	B208-1031	7044

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EXAMINER
HANNETT, JAMES M

ART UNIT	PAPER NUMBER
2612	

DATE MAILED: 03/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/295,323	HONMA, YOSHIHIRO	
	Examiner	Art Unit	
	James M Hannett	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 April 1999* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Priority

1: Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 4/24/1998. It is noted, however, that applicant has not filed a certified copy of the Hei 10-129671 application as required by 35 U.S.C. 119(b).

Specification

2: The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Signal processing apparatus which restrains a color signal from being influenced by band limitation in a color processing system.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3: Claims 1-8, and 15-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,581,298 Sasaki et al in view of USPN 5,568,195 Suzuki.

4: As for Claim 1, Sasaki et al depicts in Figure 4 the use of a signal processing apparatus, which processes a signal outputted from an image pickup element (20) having filters arranged to use plural kinds of colors (Mg, Cy, Ye, and Gr), comprising:

Interpolation means (25-28) for generating a plurality of color signals (Mg, Cy, Ye, and Gr), for each pixel position of the image pickup element (20) by interpolation based on signals of

pixels which surround each pixel position of the image pickup element; Column 7, Lines 26-65 discusses the process by which interpolation is obtained.

Color-difference Matrix Means (63) for generating color-difference signals from the plurality of color signals output from a gamma conversion circuit (62); Column 14, Lines 24-34.

Sasaki et al does not teach the use of a suppression means for suppressing the RGB signals generated by the RGB matrix, if a level of a luminance signal is not lower than a first predetermined level and/or is lower than a second predetermined level; Sasaki et al further does not teach that the suppression means is placed before the white balance circuit.

Suzuki depicts in Figure 2, and teaches on Column 3, Lines 52-56, and Column 5, Lines 31-36 the use of a suppression circuit or (Clip Circuit) (13) for suppressing the plurality of color signals generated if a level of luminance signal is not lower than a first predetermined level and/or is lower than a second predetermined level. Suzuki teaches that it is advantageous to place the clipper circuit after a color conversion circuit (11) so that the high and low values are not included in a white balance calculation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a clipper or suppression circuit after the color conversion circuit (60) of Sasaki et al in order to prevent the high and low luminance values from being included in a white balance calculation to achieve a better white balance as taught by Suzuki.

5: In regards to Claim 2, Sasaki et al teaches in Figure 4 and on Column 9, Lines 30-34 the use of a gamma correction means (62), Sasaki et al in view of Suzuki teaches providing the gamma correction means between the suppression means and color-difference matrix means (63) for performing gamma correction on the plurality of color signals output from the suppression

means. Sasaki et al in view of Suzuki teaches placing the suppression means or clipper circuit before a white balance circuit so that white balance can be improved. Sasaki et al further teaches that a gamma correction circuit (62) is placed after a white balance circuit (61), and before a color difference matrix (63). Therefore, the gamma correction circuit will perform gamma correction on the plurality of color signals output from the suppression or clipper circuit.

6: As for Claim 3, Sasaki et al further teaches in Figure 4 and on Column 9, Lines 20-22 the use of a white balance circuit (61) which is viewed as a luminance signal correction means for correcting the luminance signal on the basis of the plurality of color signals suppressed by the suppression means.

7: In regards to Claim 4, Sasaki et al further teaches in Figure 4 that the luminance signal correcting means, which is viewed as the white balance correction circuit (61), corrects the luminance signal before the luminance signal is gamma-corrected (62).

8: As for Claim 5, Sasaki et al depicts in Figure 4 the use of a signal processing apparatus, which processes a signal outputted from an image pickup element (20) having filters arranged to use complimentary color filters of the colors (Mg, Cy, Ye, and Gr), comprising:

Interpolation means (25-28) for generating a plurality of color signals (Mg, Cy, Ye, and Gr), for each pixel position of the image pickup element (20) by interpolation based on signals of pixels which surround each pixel position of the image pickup element; Column 7, Lines 26-65 discusses the process by which interpolation is obtained.

RGB Matrix means (60) for generating RGB signals from complimentary color signals (Mg, Cy, Ye, and Gr) interpolated by the interpolation means (25-28); Column 8, Lines 52-67.

Color-difference Matrix Means (63) for generating color-difference signals from the plurality of color signals output from a gamma conversion circuit (62); Column 14, Lines 24-34.

Sasaki et al does not teach the use of a suppression means for suppressing the RGB signals generated by the RGB matrix, if a level of a luminance signal is not lower than a first predetermined level and/or is lower than a second predetermined level; Sasaki et al further does not teach that the suppression means is placed before the white balance circuit.

Suzuki depicts in Figure 2, and teaches on Column 3, Lines 52-56, and Column 5, Lines 31-36 the use of a suppression circuit or (Clip Circuit) (13) for suppressing the plurality of color signals generated if a level of luminance signal is not lower than a first predetermined level and/or is lower than a second predetermined level. Suzuki teaches that it is advantageous to place the clipper circuit after a color conversion circuit (11) so that the high and low values are not included in a white balance calculation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a clipper or suppression circuit after the color conversion circuit (60) of Sasaki et al in order to prevent the high and low luminance values from being included in a white balance calculation to achieve a better white balance as taught by Suzuki.

9: In regards to Claim 6, Sasaki et al teaches in Figure 4 and on Column 9, Lines 30-34 the use of a gamma correction means (62), Sasaki et al in view of Suzuki teaches providing the gamma correction means between the suppression means and color-difference matrix means (63) for performing gamma correction on the plurality of color signals output from the suppression means. Sasaki et al in view of Suzuki teaches placing the suppression means or clipper circuit before a white balance circuit so that white balance can be improved. Sasaki et al further teaches

that a gamma correction circuit (62) is placed after a white balance circuit (61), and before a color difference matrix (63). Therefore, the gamma correction circuit will perform gamma correction on the plurality of color signals output from the suppression or clipper circuit.

10: As for Claim 7, Sasaki et al further teaches in Figure 4 and on Column 9, Lines 20-22 the use of a white balance circuit (61) which is viewed as a luminance signal correction means for correcting the luminance signal on the basis of the RGB Color signals suppressed by the suppression means.

11: In regards to Claim 8, Sasaki et al further teaches in Figure 4 that the luminance signal correcting means, which is viewed as the white balance correction circuit (61), corrects the luminance signal before the luminance signal is gamma-corrected (62).

12: As for Claim 15, Claim 15 is rejected for reasons discussed related to Claim 1, since Claim 1 is substantively equivalent to Claim 15.

13: In regards to Claim 16, Claim 16 is rejected for reasons discussed related to Claim 2, since Claim 2 is substantively equivalent to Claim 16.

14: As for Claim 17, Claim 17 is rejected for reasons discussed related to Claim 3, since Claim 3 is substantively equivalent to Claim 17.

15: In regards to Claim 18, Claim 18 is rejected for reasons discussed related to Claim 4, since Claim 4 is substantively equivalent to Claim 18.

16: As for Claim 19, Claim 19 is rejected for reasons discussed related to Claim 5, since Claim 5 is substantively equivalent to Claim 19.

17: In regards to Claim 20, Claim 20 is rejected for reasons discussed related to Claim 6, since Claim 6 is substantively equivalent to Claim 20.

18: As for Claim 21, Claim 21 is rejected for reasons discussed related to Claim 7, since Claim 7 is substantively equivalent to Claim 21.

19: In regards to Claim 22, Claim 22 is rejected for reasons discussed related to Claim 8, since Claim 8 is substantively equivalent to Claim 22.

20: Claims 9-11, and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,581,298 Sasaki et al in view of USPN 5,115,319 Arai et al in view of USPN 5,568,195 Suzuki.

21: As for Claim 9, Sasaki et al depicts in Figure 4 the use of a signal processing apparatus, which processes a signal outputted from an image pickup element (20) having filters arranged to use complimentary color filters of the colors (Mg, Cy, Ye, and Gr), comprising:

Interpolation means (25-28) for generating a plurality of color signals (Mg, Cy, Ye, and Gr), for each pixel position of the image pickup element (20) by interpolation based on signals of pixels which surround each pixel position of the image pickup element; Column 7, Lines 26-65 discusses the process by which interpolation is obtained.

RGB Matrix means (60) for generating RGB signals from complimentary color signals (Mg, Cy, Ye, and Gr) interpolated by the interpolation means (25-28); Column 8, Lines 52-67.

Sasaki et al does not teach the use of a suppression means for suppressing the complimantary color signals interpolated by the interpolation means, if a level of a luminance signal is not lower than a first predetermined level and/or is lower than a second predetermined level; Sasaki et al further does not teach that the suppression means is placed before the RGB matrix circuit.

Suzuki depicts in Figure 2, and teaches on Column 3, Lines 52-56, and Column 5, Lines 31-36 the use of a suppression circuit or (Clip Circuit) (13) for suppressing the plurality of color signals generated if a level of luminance signal is not lower than a first predetermined level and/or is lower than a second predetermined level. Suzuki teaches that it is advantageous to place the clipper circuit before a white balance circuit so that the high and low values are not included in a white balance calculation.

Arai et al depicts in Figure 1, and teaches on Column 3, Lines 13-19, the use of a suppression circuit or (Clipper Circuit) (16) for suppressing the plurality of color signals generated if a level of luminance signal is not lower than a first predetermined level and/or is lower than a second predetermined level. Arai et al teaches that it is advantageous to place the clipper circuit directly after the A/D converter (15) so that the high and low values are not included in calculation resulting in a higher image quality.

The combination of Suzuki and Arai et al teaches that it is advantageous to have a suppression circuit to suppress the plurality of color signals generated if a level of luminance signal is not lower than a first predetermined level and/or is lower than a second predetermined level in order to eliminate the high and low signal levels from a white balance calculation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the suppression operation before or after the RGB conversion circuit of Sasaki et al, because it was commonly know in the art at the time the invention was made to perform clipping operations in different color spaces. Therefore, the suppression circuit could have been realized in either a (RGB) color space or a (Mg,Cy,Ye,Gr) color space.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a clipper or suppression circuit before the color conversion circuit (60) of Sasaki et al in order to prevent the high and low luminance values from being included in a white balance calculation to achieve a better white balance as taught by Suzuki.

22: In regards to Claim 10, Sasaki et al further teaches in Figure 4 and on Column 9, Lines 20-22 the use of a white balance circuit (61) which is viewed as a luminance signal correction means for correcting the luminance signal on the basis of the RGB Color signals suppressed by the suppression means.

23: As for Claim 11, Sasaki et al further teaches in Figure 4 that the luminance signal correcting means, which is viewed as the white balance correction circuit (61), corrects the luminance signal before the luminance signal is gamma-corrected (62).

24: As for Claim 23, Claim 23 is rejected for reasons discussed related to Claim 9, since Claim 9 is substantively equivalent to Claim 23.

25: In regards to Claim 24, Claim 24 is rejected for reasons discussed related to Claim 10, since Claim 10 is substantively equivalent to Claim 24.

26: As for Claim 25, Claim 25 is rejected for reasons discussed related to Claim 11, since Claim 11 is substantively equivalent to Claim 25.

27: Claims 12-14, and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,581,298 Sasaki et al in view of USPN 5,115,319 Arai et al.

28: In regards to Claim 12, Sasaki et al depicts in Figure 4 the use of a signal processing apparatus, which processes a signal outputted from an image pickup element (20) having filters arranged to use plural kinds of colors (Mg, Cy, Ye, and Gr), comprising:

Interpolation means (25-28) for generating a plurality of color signals (Mg, Cy, Ye, and Gr), for each pixel position of the image pickup element (20) by interpolation based on signals of pixels which surround each pixel position of the image pickup element; Column 7, Lines 26-65 discusses the process by which interpolation is obtained.

Sasaki et al does not teach the use of a suppression means for suppressing the RGB signals generated by the RGB matrix, if a level of a luminance signal is not lower than a first predetermined level and/or is lower than a second predetermined level; Sasaki et al further does not teach that the suppression means is placed before the interpolation circuit.

Arai et al depicts in Figure 1, and teaches on Column 3, Lines 13-19, the use of a suppression circuit or (Clipper Circuit) (16) for suppressing the plurality of color signals generated if a level of luminance signal is not lower than a first predetermined level and/or is lower than a second predetermined level. Arai et al teaches that it is advantageous to place the clipper circuit directly after the A/D converter (15) so that the high and low values are not included in calculation resulting in a higher image quality.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a clipper or suppression circuit after the A/D converter (21) of Sasaki et al in order to prevent the high and low luminance values from being included in calculation in order to achieve a higher image quality as taught by Arai et al.

29: As for Claim 13, Sasaki et al further teaches in Figure 4 and on Column 9, Lines 20-22 the use of a white balance circuit (61) which is viewed as a luminance signal correction means for correcting the luminance signal on the basis of the RGB Color signals suppressed by the suppression means.

30: In regards to Claim 14, Sasaki et al further teaches in Figure 4 that the luminance signal correcting means, which is viewed as the white balance correction circuit (61), corrects the luminance signal before the luminance signal is gamma-corrected (62).

31: In regards to Claim 26, Claim 26 is rejected for reasons discussed related to Claim 12, since Claim 12 is substantively equivalent to Claim 26.

32: As for Claim 27, Claim 27 is rejected for reasons discussed related to Claim 13, since Claim 13 is substantively equivalent to Claim 27.

33: In regards to Claim 28, Claim 28 is rejected for reasons discussed related to Claim 14, since Claim 14 is substantively equivalent to Claim 28.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure USPN 4,799,105 Mitchell et al teaches the use of eliminating High and low luminance signals from calculations to improve image quality; USPN 5,900,732 Felmlee et al teaches the use of eliminating High and low luminance signals from calculations to improve image quality; USPN 4,825,293 Kobayashi et al teaches the use of a camera with a color conversion matrix, a gamma correction circuit, a clipper circuit, a color separation circuit; USPN 5,049,983 Matsumoto et al teaches the use of a camera with an image sensor and a color matrix circuit; USPN 5,541,648 Udagawa et al teaches the use of an image sensor, an interpolation filter, a color conversion circuit, a white balance circuit, a gamma correction circuit, and a color difference matrix, USPN 6,388,706 Takizawa et al teaches the use of a camera with an image sensor, an interpolation section, a color transformation section, and a gamma correction circuit; USPN 5,319,449 Saito et al teaches the use of a camera with an image sensor, a signal separator,

a color conversion matrix, a white balance circuit, a gamma correction circuit, and a color difference matrix; USPN 5,295,001 Takahashi teaches the use of a threshold value generating circuit and an image sensor that is of the color scheme RGB, therefore, requiring no color conversion circuitry from a four color color-space to a three color color-space.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M Hannett whose telephone number is 703-305-7880. The examiner can normally be reached on 8:00 am to 5:00 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 703-305-4929. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-842-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to customer service whose telephone number is 703-308-6789.

James Hannett
Examiner
Art Unit 2612

JMH
March 3, 2003

WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600